

## CLAIMS

- 1 1. A method of forming a mixed fiber mat, the method comprising:
  - 2 (a) forming a multi-layer mat from a first continuous strand glass fiber mat and a
  - 3 first layer of thermoplastic fibers; and
  - 4 (b) needle-punching the multi-layer mat to intertwine the fibers.
- 1 2. The method in accordance with claim 1, wherein the thermoplastic fibers further  
2 comprise polypropylene fibers.
- 1 3. The method in accordance with claim 2, wherein the step of forming the multi-layer  
2 mat further comprises disposing staple polypropylene fibers on a first side of the  
3 continuous strand glass fiber mat.
- 1 4. The method in accordance with claim 3, wherein the step of forming the multi-layer  
2 mat further comprises disposing staple polypropylene fibers on a second side of the  
3 continuous strand glass fiber mat.
- 1 5. The method in accordance with claim 4, further comprising the step of forming at least  
2 one additional layer.

1 6. The method in accordance with claim 3, wherein the step of forming the multi-layer  
2 mat further comprises disposing a second continuous strand glass fiber mat on a side of  
3 the first layer of polypropylene fibers that is opposite the first continuous strand glass  
4 fiber mat.

1 7. The method in accordance with claim 3, wherein the step of forming the multi-layer  
2 mat further comprises disposing a second glass fiber mat on a side of the first layer of  
3 polypropylene fibers that is opposite the first continuous strand glass fiber mat.

1 8. The method in accordance with claim 3, wherein the step of forming the multi-layer  
2 mat further comprises disposing a plurality of staple glass fibers on a side of the first  
3 layer of polypropylene fibers that is opposite the first continuous strand glass fiber mat.

1 9. The method in accordance with claim 2, further comprising the steps of placing the  
2 multi-layer mat in a mold at sufficient pressure and temperature to melt the  
3 polypropylene fibers, and then cooling the multi-layer mat to a temperature sufficient to  
4 harden the melted polypropylene fibers.

1 10. The mixed fiber mat producing according to the method of claim 1.

1 11. A mixed fiber mat comprising a first continuous strand glass fiber mat and a first  
2 layer of thermoplastic fibers needle-punched together to intertwine the fibers.

1 12. The mixed fiber mat in accordance with claim 11, wherein the thermoplastic fibers  
2 are staple polypropylene fibers.

1 13. The mixed fiber mat in accordance with claim 12, wherein the layer of staple  
2 polypropylene fibers are disposed on a first side of the continuous strand glass fiber mat.

1 14. The mixed fiber mat in accordance with claim 13, further comprising staple  
2 polypropylene fibers disposed on a second, opposite side of the continuous strand glass  
3 fiber mat.

1 15. The mixed fiber mat in accordance with claim 14, further comprising at least one  
2 additional fiber layer.

1 16. The mixed fiber mat in accordance with claim 13, further comprising a second  
2 continuous strand glass fiber mat disposed on a side of the first layer of polypropylene  
3 fibers that is opposite the first continuous strand glass fiber mat.

1 17. The mixed fiber mat in accordance with claim 13, further comprising a second glass  
2 fiber mat disposed on a side of the first layer of polypropylene fibers that is opposite the  
3 first continuous strand glass fiber mat.

1 18. The mixed fiber mat in accordance with claim 13, further comprising a plurality of  
2 staple glass fibers disposed on a side of the first layer of polypropylene fibers that is  
3 opposite the first continuous strand glass fiber mat.